

## CLAIMS

1. A packet communication network that is connected to a first external network and a second external network, and that executes packet communication between the first  
5 external network and the second external network, the packet communication network comprising:

a parallel network constituted by a plurality of physically or logically independent networks;

at least one classifier that is connected to the first  
10 external network and to each of the networks in the parallel network, and that classifies a packet received from the first external network to one of the networks in the parallel network; and

at least one multiplexer that is connected to each of  
15 the networks in the parallel network and to the second external network, that multiplies packets received from a plurality of networks in the parallel network, and that outputs multiplexed packet to the second external network.

20 2. The packet communication network according to claim 1, wherein the classifier classifies a packet according to a feature amount of a form of the packet.

3. The packet communication network according to claim 2,  
25 wherein the feature amount is a packet length of the packet.

4. The packet communication network according to claim 1, wherein the classifier classifies a packet according to a feature amount of contents of the packet.

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5. The packet communication network according to claim 4, wherein the feature amount is a DiffServ code point of an IP packet.

6. The packet communication network according to claim 4,  
wherein the feature amount is any one of a protocol number  
of an IP packet, a destination port number of a UDP packet,  
5 and a destination port number of a TCP packet.

7. The packet communication network according to any one  
of claims 2 to 6, wherein the classifier classifies the  
packet according to a time series change in a sum of data  
10 amounts of packets having an equal feature amount.

8. The packet communication network according to claim 1,  
wherein the classifier includes a detector that detects a  
status of traffic of each of the networks in the parallel  
15 network, and classifies a packet according to the status of  
the traffic.

9. The packet communication network according to claim 1,  
wherein the networks in the parallel network are logically  
20 grouped into a plurality of groups so that each of the  
group includes a plurality of networks that are physically  
same.

10. The packet communication network according to claim 9,  
25 wherein each of the groups include a unit that dynamically  
changes an allocation of bands to each of the networks in  
the group.

11. The packet communication network according to claim 1,  
30 wherein the multiplexer preferentially processes a packet  
received from a specific one of the networks in the  
parallel network.

12. The packet communication network according to claim 1, wherein the multiplexer preferentially processes a packet having a predetermined feature amount.

5 13. A packet communication method realized on a packet communication network that is connected to a first external network and a second external network, and that executes a packet communication between the first external network and the second external network, wherein the packet  
10 communication network includes

a parallel network constituted by a plurality of physically or logically independent networks;

at least one classifier that is connected to the first external network and to each of the networks in the  
15 parallel network; and

at least one multiplexer that is connected to each of the networks in the parallel network and to the second external network, wherein the packet communication method includes

20 the classifier classifying a packet received from the first external network to one of the networks in the parallel network;

each of the networks in the parallel network transferring the packet; and

25 the multiplexer multiplexing packets received from a plurality of networks in the parallel network and outputting multiplexed packet to the second external network.

30 14. The packet communication method according to claim 13, wherein the classifier classifies a packet according to a feature amount of a form of the packet.

15. The packet communication method according to claim 14,  
wherein the feature amount is a packet length of the packet.
16. The packet communication method according to claim 13,  
5 wherein the classifier classifies a packet according to a  
feature amount of contents of the packet.
17. The packet communication method according to claim 16,  
wherein the feature amount is a DiffServ code point of an  
10 IP packet.
18. The packet communication method according to claim 16,  
wherein the feature amount is any one of a protocol number  
of an IP packet, a destination port number of a UDP packet,  
15 and a destination port number of a TCP packet.
19. The packet communication method according to any one  
of claims 14 to 18, wherein the classifier classifies the  
packet according to a time series change in a sum of data  
20 amounts of packets having an equal feature amount.
20. The packet communication method according to claim 13,  
wherein the classifier detects a status of traffic of each  
of the networks in the parallel network, and classifies a  
25 packet according to the status of the traffic.
21. The packet communication method according to claim 13,  
wherein the networks in the parallel network are logically  
grouped into a plurality of groups so that each of the  
30 group includes a plurality of networks that are physically  
same.
22. The packet communication method according to claim 21,

wherein each of the groups include a unit that dynamically changes an allocation of bands to each of the networks in the group.

5    23.    The packet communication method according to claim 13, wherein the multiplexer preferentially processes a packet received from a specific one of the networks in the parallel network.

10   24.    The packet communication method according to claim 13, wherein the multiplexer preferentially processes a packet having a predetermined feature amount.